

San Diego DX Club Bulletin

January 2021



MEETING PROGRAM:

ZOOM MEETING
NOTICE AND LOGIN INSTRUCTIONS ON PAGE 2
WED. JANUARY 27, 2021 6:30 P.M.

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From the Prez . . .

Pat, WA6MHZ

SDDXC Meeting on Zoom

Happy New Year SDDXC Members!

I have set up the next Club Zoom meeting. The link is below.

I would also like to ask members that have not already sent in their 2021 dues to do so now.

You can check if your "Paid Through" is still 2020 at www.sddxc.org/dxroster.php

If it is, you can pay using PayPal <https://paypal.me/DXClub/20> or by mailing me a check.

The Zoom link to the next meeting is:

SDDXC Zoom meeting Jan 27, 2021

Time: Jan 27, 2021 06:30 PM Pacific Time (US and Canada)

Join Zoom Meeting

<https://us02web.zoom.us/j/84443388620?pwd=L1YrS0xwTGh2ZmphZkxYbjUxTGpodz09>

Meeting ID: 844 4338 8620

Passcode: 066146

One tap mobile

+16699006833,,84443388620#,,,,*066146# US (San Jose)

Best DX,

73,

Pat, WA6MHZ

Secretary/Treasurer Reports

Randy, KQ6RS

SDDXC Meeting Minutes, November 25, 2020

Our November meeting was held using the Zoom video conferencing application. 26 members and four guests participated.

At 6:38 P.M. Eric Gruff, NC6K called the meeting to order.

Our guests were Heather Parker KM6ZQB, Steve Handrop, K6RSH (his 2nd time as a guest), Jerry Stafford, W6KIN (his 3rd time as a guest), and Richard Sherwood, N6RU (his 2nd time as a guest).

Announcements: The SDDXC club reflector moved from Yahoo to groups.io. There will not be a meeting in December.

At 6:56 P.M. we started the roundtable.

We did not have a presenter this month.

At 7:52 P.M. the meeting was adjourned.

Treasurer's Report

Income for November & December: \$798.82 for membership

Expenses for November & December: None

Balance on 1/12/2021 \$6,220.55



Randy, KQ6RS

SDDXC TOP 10

By John, K6AM

SDDXC Contest Results

By John, K6AM



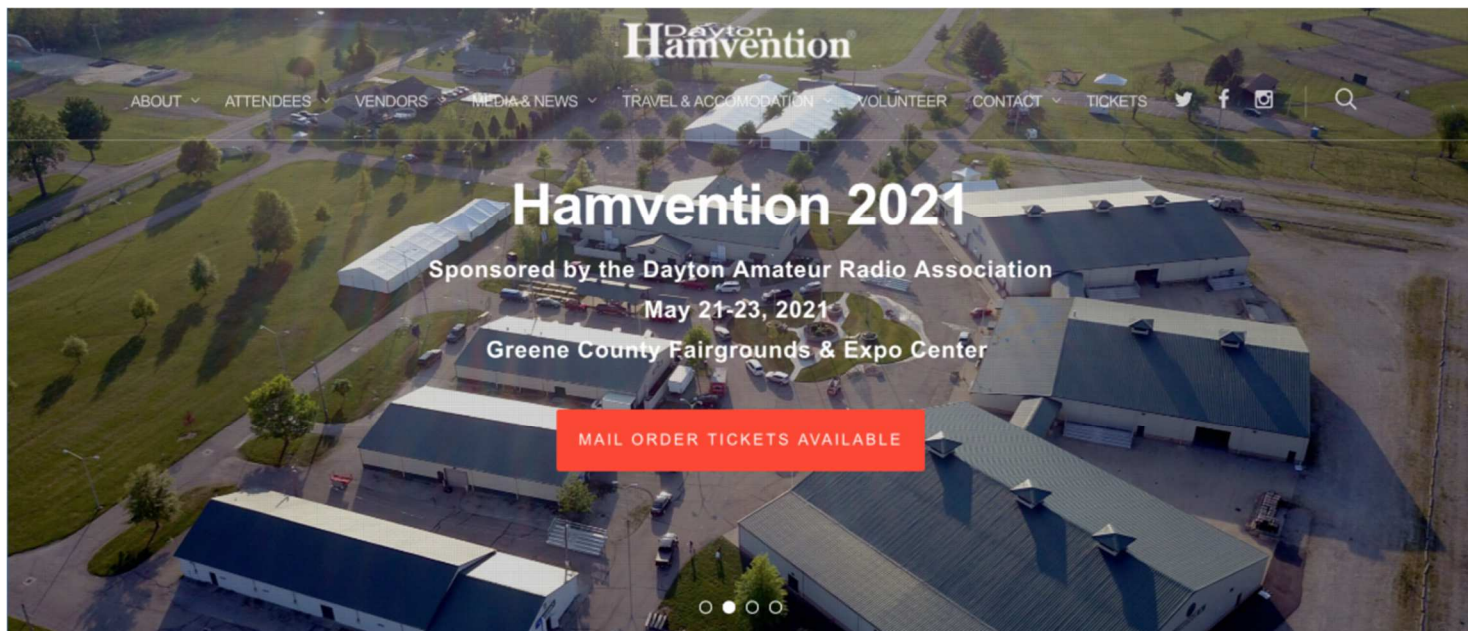
Returning in February

John, K6AM

Hi all – I have just been appointed by N6AA as a DXCC QSL card checker. Pat WA6MHZ, who is also a card checker, nominated me after Harry W6YOO became a Silent Key. Harry had been a card checker for many years.

I realize that the bulk of our QSLing is now done via LOTW. However if anyone needs card checking, let me know. I apparently can do DXCC, WAS, and VUCC.

73 – Jim K6ZH



Hamvention 2021 Cancellation Release:

Unfortunately, several setbacks in the recovery from the COVID-19 pandemic make necessary the difficult decision to cancel Hamvention 2021. Hundreds of volunteers have been working to do everything necessary to bring this Hamvention to the many amateur radio enthusiasts and vendors who support the Dayton Hamvention.

Vaccine distribution both in the United States and around the world is lagging behind what was planned. In addition, the emergence of a more communicable form of the COVID-19 virus increases the potential for further public health problems in the next few months. We make this difficult decision for the safety of our guests and vendors. Those who had their tickets deferred last year will be deferred again.

Stay tuned for information about a QSO party for the Hamvention weekend. We'll be back next year!!!

Executive Committee, Dayton Hamvention 2021

For Immediate Release: January 8, 2021

QSO Today Virtual Ham Expo

Tel: +1-213-577-0092

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Press Release

LOS ANGELES - QSO Today host Eric Guth, 4Z1UG, announced that the next QSO Today Virtual Ham Expo will commence on March 13-14, 2021, over a period of 48 hours. The first QSO Today Expo was a great success with over 16,000 attendees and the March 2021 event is anticipated to be even larger. The QSO Today team has been working hard to make this upcoming Expo even better with new speakers, panel discussions, kit building workshops, and much more. Anyone can attend from their home or office. Early Bird Tickets are just \$10 (to help cover the cost of this event, \$12.50 at the "door") and include entry for the Live 2 day period as well as the 30-day on-demand period). Registration can be found at www.qsotodayhamexpo.com.

Eric and his team have put together a world-class line-up of 60+ speakers to address this conference from the virtual Expo's auditorium. ARRL, the national association for Amateur Radio® in the United States, is a QSO Today Expo Partner. Flexradio is the Expo's Platinum Sponsor, and Gold sponsors as of this time include Elecraft, RFinder, and CSI.

At the Expo, amateur radio operators will be able to:

- Learn from a packed line-up of renowned ham radio speakers such as Bob Allphin, K4UEE, on "My Favorite DXpeditions to DXCC Top 10 Most Wanted"; Michael Foerster, W0IH, on "Using the Arduino In Your Shack"; and Ron Jones, K7RJ, on "3D Printer Basics".
- Take part in Live virtual kit building workshops. Kits will be available for purchase and delivered to you in time for the Expo so you can participate and build from the convenience of your home.
- Walkthrough the virtual exhibit hall filled with popular amateur radio suppliers. Watch live product demos of the latest equipment. New video technology will be used to provide a better experience for attendees to engage with exhibitors.
- Prior to the Expo, take advantage of our new speaker calendar technology to download speaker times in your local time zones to your Google or Outlook calendar. You'll then have a complete schedule of the sessions you want to join.

Return over the next 30 days to listen to speakers you missed during the Live period, explore, and re-engage exhibitor offerings.

"While attendance is expected from traditional in-person convention "goers" not traveling due to Covid, the virtual Expo is a great opportunity for those that don't typically attend in-person events - the vast majority of amateur radio operators. At our last Expo, we found that 60% of attendees don't go to in-person national conferences and 40% don't attend state or local events - mostly because of distance or because of the thousands of dollars typically spent on travel and lodging." said Eric, 4Z1UG.

"The QSO Today Virtual Ham Expo has all of the familiar hallmarks of an in-person hamfest, including opportunities to connect and learn. Expect to bump into friends and well known experts and personalities from throughout our worldwide ham radio community!" said Bob Inderbitzen, NQ1R, ARRL Product Development Manager

For more information, go to www.qsotodayhamexpo.com

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From the Editor

Bob, K9RHY



Well, I've had my Pfizer shots and now leave the mask next to my car keys near the front door. Since Colorado still has a mask mandate in place, I always follow the rules and wear my protective gear when I leave the house, but mask-freedom MAY be on the horizon. I hope so. Boy, do I hope so.

As to the car keys, there is a lot of online gossip about protecting your keyfob with a Faraday shield. If you drive a shiny set of wheels with keyless access, it might be worth your while to pay attention to this one folks. A friend's brand new Ford truck was broken into at the local airport. There wasn't a scratch anywhere. He said he locked it by hand, but this video shows that this doesn't make a difference.

<https://www.youtube.com/watch?v=2tQVov0Ra8g>

This month's ***From the Editor*** column was inspired by a video by a PBS documentary and the PanAm Historical Foundation titled "***Across the Pacific***".



You can watch this interesting documentary on Amazon Prime at <https://www.amazon.com/dp/B0888MFZR2/>

You may wonder why a story about flying boats might be interesting to DXers. Read on, you'll see why. One thing I learned by watching this documentary is how closely the history's of aviation and long distance radio communication are intertwined.

Commercial aviation got a jump-start following the conclusion of WW I in 1918. Army surplus biplanes, left over from pilot training were available for pennies on the dollar. From barnstorming and exhibitions to fascinated audiences, the “flying machine” was seen as an interesting experiment, albeit one with limited value.

But aviation started to become commercially viable as these planes and their brave pilots began flying the U.S. Mail, giving origin to the term “airmail”.

At the same time, radio was progressing from spark to CW. Flying and communicating by radio were maturing slowly, surely and in parallel, but no one had (yet) joined the technologies together.

The Need for Aviation Radio

Put yourself into the pilot’s seat. You have navigated only across land, You used landmarks on the ground — rivers, towns, lakes, railroad tracks (!) — to help you determine where you were. In bad weather, you couldn’t follow the railroad tracks because you couldn’t see them. This was the state of aeronautical navigation until Charles Lindbergh flew from New York to Paris across the Atlantic Ocean. There are no railroad tracks to follow across the ocean. He needed a better way. But no radio—not yet. Lindbergh navigated using a Great Circle map (bought from a store in San Pedro), a chart for magnetic variation, a time-zone chart, an earth inductor compass, a drift sight, a speed timer (a stopwatch for the drift sight), and an eight-day clock ! No GPS!

I use my GPS to find the grocery store. Lindbergh didn’t need one to cross the ocean.

PanAm could have used GPS to navigate from Oakland to Manila, but in 1930s, such a technology wasn’t even a dream.

The need for radio-assisted navigation became acute when a PanAm flight from Havana to Key West became lost, ran out of gas and crashed 300 miles west of the airport.

Aerial navigation was by dead reckoning: If you didn’t reckon correctly, you ended up dead. This was not the way to build confidence in passenger (or freight) transportation.

The Hardware

In the 1920s and 1930s, radios were big and heavy, a far cry from the solid state equipment we use today. Remember the term “boat anchor”? The batteries to power the transmitters alone consumed valuable space and added excessive weight. A 10 watt transmitter was the limit in those days. However, if your design point was a small footprint with light weight, a receiver alone could be the answer. But how do you make such a “system” work?

Here’s how: On July 6, 1920, US Navy seaplane pilots used a radio compass to locate and navigate their way to a ship 100 miles offshore, marking the first use of radio navigation by an aircraft. Radio direction finders (RDF), had been around since 1902 and worked by comparing the signal strength received by a directional antenna as it points in different directions. This allowed for bearings to be based on the transmitting source.

Well, close, but no cigar. RDF is great if you don’t need an accurate (within 1 degree) course. If you’re flying 300 miles, being off course by, say, 2 degrees can land you many miles away from your target landing strip. A better way was needed.

Before going into the solution, a look at the state of the art in aircraft receiving gear might be interesting. The RCA AR-60S was considered the state of the art when it was introduced in 1935. At a price of \$495 in depression dollars, the AR-60S was not intended to be sold to the average ham. In 1935, \$495.00 could buy you a new car (but not one with keyless entry—for sure).



Used in aircraft, aboard Navy and Coast Guard vessels (as well as in land-based locations), the AR-60S is said to be the last receiver to hear Amelia Earhart's aircraft transmitter before the signal was lost forever.

Competing with the AR-60S was the venerable National HRO. The first HRO was introduced in October, 1934 at a less wallet-busting price of \$167.70 plus power supply

(at an additional cost of \$15.90).

The airlines purchased a bunch of HROs, led by Braniff Airlines. Remember railroad-track-navigation? Braniff decided that the HRO could be operated unattended. They installed HRO receivers on telephone poles spaced 50 miles apart. That way they could get the coverage to communicate with airplanes all along the route. They mounted HRO's in boxes on poles every 50 miles along the main route of the aircraft. These receivers ran continuously 24 hours a day tuned to 3.105 KHz, the aircraft transmitting frequency.

The receiver outputs were patched into land lines and could be monitored in Kansas City, Dallas, Tulsa, Oklahoma City or anywhere. They had continuous voice monitoring of the planes all along the route.

That is where the HRO got its big impetus. Also, the Howard Hughes flight around the world used the HRO, two at each ground station.

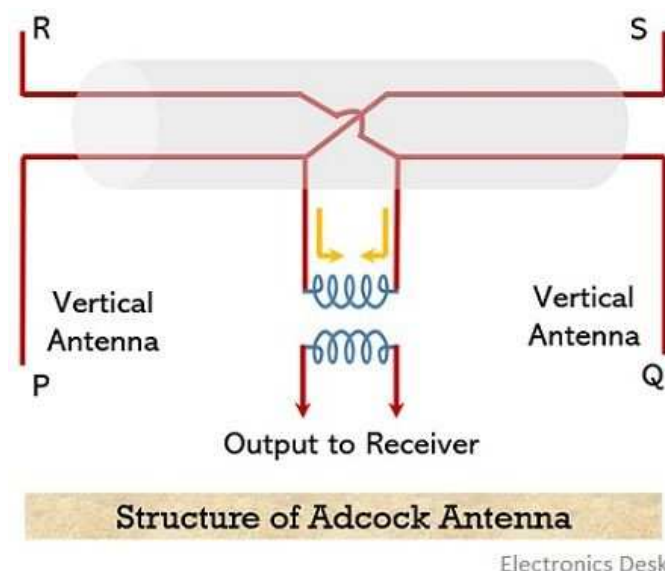
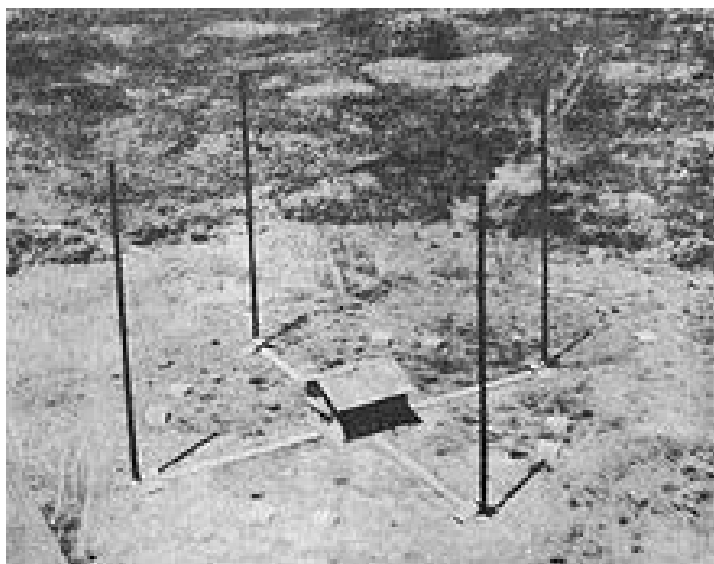


“Secret Sauce” #1

Recall that 3 degrees of directivity didn’t meet the requirements for a commercially-viable aircraft navigation system, the Adcock antenna is an antenna consisting of four equidistant vertical elements which can be used to transmit or receive directional signals.

The Adcock array was invented and patented by British engineer Frank Adcock in 1919 and has been used for a variety of applications, both civilian and military, ever since. Although originally conceived for receiving low frequency (LF) waves, it has also been used for transmitting, and has since been adapted for use at much higher frequencies, up to ultra high frequency (UHF).

In the early 1930s, the Adcock antenna (transmitting in the LF/MF bands) became a key enabling technology for the newly created aviation radio navigation system.



Frank Adcock originally used this antenna as a receiving antenna, to find the azimuthal direction from which a radio signal was coming in order to find the location of the transmitter. Before Adcock, engineers used loop antennas to achieve directional sensitivity. They discovered that due to atmospheric disturbances and reflections, the detected signals included significant components of electromagnetic interference and distortions: horizontally polarized radiation contaminated the signal of interest and reduced the accuracy of the measurement.

Adcock solved this problem by replacing the loop antennas with symmetrically inter-connected pairs of vertical monopole or dipole antennas of equal length, thus creating the equivalent of square loops, but without their horizontal members, eliminating sensitivity to much of the horizontally polarized distortion.

The Adcock design is capable of resolving a transmitted or received signal to an accuracy of less than one degree, suitable for long range navigation purposes.

"Secret Sauce" #2

Putting these pieces together requires one more element of radio technology. A way to "fly the beam" to the desired location.

Each Adcock range station had four 134-foot-tall (41 m) antenna towers erected on the corners of a 425 × 425 ft square, with an optional extra tower in the center for voice transmission and homing. The stations transmitted on 190 to 535 kHz with 1,500 watts, into four quadrants.

The radiation of one opposing quadrant pair was modulated (at an audio frequency of 1,020 Hz with a Morse code for the letter A (· —), and the other pair with the letter N (— ·). The intersections between the quadrants defined four course lines emanating from the transmitting station, along four compass directions, where the A and N signals were of equal intensity, with their combined Morse codes merging into a steady 1,020 Hz audio tone.

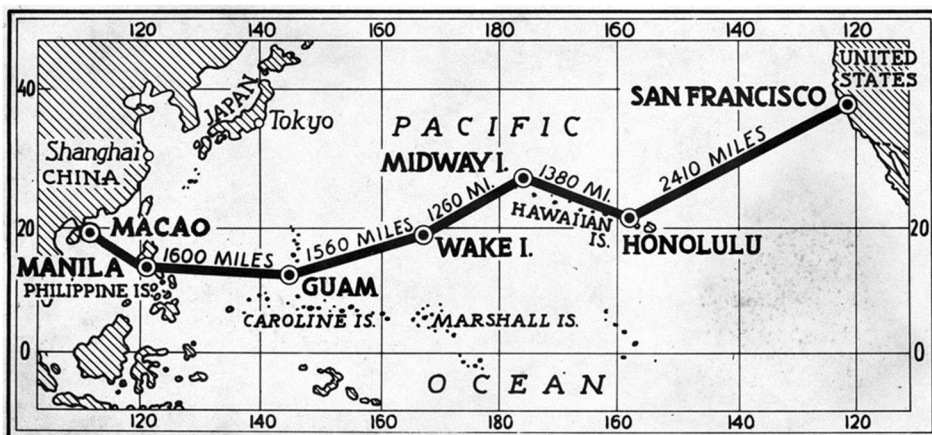
These course lines (also called "legs"), where only a tone could be heard, was called "flying the beam". In addition to the repeating A or N modulation signal, each transmitting station would also transmit its two-letter Morse code identifier once every thirty seconds for positive identification.¹ The station identification would be sent twice: first on the N pair of transmitters, then on the A, to ensure coverage in all quadrants.

The airborne radio receivers were tuned to the frequency of the low-frequency radio ground transmitters, and the Morse code audio was detected and amplified into headsets worn by the pilots. The pilots would listen to the audio signal, and fly the aircraft along the course lines ("flying the beam"), where a uniform tone would be heard. If the



signal of a single letter (A or N) became audibly distinct, the aircraft would be turned as needed so that the modulation of the two letters would overlap again, and the Morse code audio would become a steady tone - the "on course" region, where the A and N audibly merged.

This is the system by which PanAm spanned the Pacific Ocean carrying passengers on November 22, 1935.



Bob, K9RHY